

BIOCHEMISTRY

**Clean Damaged Tissue
By Enzyme Treatment**

► INFECTION-PRONE tissue, damaged by burns or wounds, can be cleansed with enzymes extracted from exotic plants, fish and animals, research indicates.

Drs. Seth Willard Smith and W. G. Clark of the University of California at Los Angeles Medical School and the Los Angeles Veterans Administration Center are doing such enzyme studies, supported by the U. S. Army.

Damaged tissue in burns and wounds favors bacterial growth and, even with the use of antibiotics, is a serious obstacle to treatment. Using enzymes, which in nature break down complicated proteins and other substances so that living matter can utilize them, to "digest away" damaged tissue has been under investigation for several years.

One of the biggest problems is finding an enzyme that will act on collagen, a protein which apparently gives toughness to tissue. This substance helps form an infection-prone, leathery layer in burns that resists separation.

Promising enzymes have been extracted from papaya, tropical fig trees and pineapple, long known for a tenderizing effect on meat.

Others have been isolated from tissue of tuna fish, cattle and hogs.

The threat of flash burns on a massive scale from nuclear weapons and resultant mass infections has spurred research in this field.

Science News Letter, November 17, 1956

TECHNOLOGY

**Nylon Dyeing Process
Allows Hot Washing**

► SUCCESS is reported in dyeing nylon so that delicately tinted lingerie can be washed in near boiling water instead of in water of baby-bath temperature.

The patent-applied-for process for dyeing filament nylon yarn that makes this possible was developed in the Chemstrand Laboratories at Decatur, Ala.

Walter H. Hindle, associate director in charge of textile research, explained that, whereas 120-degree Fahrenheit wash water has been considered tops for safe washing of nearly all such dyed filament nylon products, nylon dyed by the new Chemnyle process can be safely washed at temperatures of 160 degrees, and in some cases up to 212 degrees, and the color stays fast.

"The new process provides a previously unmatched combination dyeing uniformity and colorfastness worthy of the long lasting qualities of filament nylon yarn," Mr. Hindle said.

"For the first time in history, nylon can be successfully dyed in fast color for a variety of end products including taffeta, tricot, sweaters and half-hose."

In addition to improved washing color-

fastness, the Chemnyle process provides much improved lightfastness.

The method uses dye assistants to modify the application of existing acid and direct dyestuffs. It is adaptable to all forms of existing dyeing equipment.

"With the new process," Mr. Hindle said, "the same excellent uniformity of dyeing has been obtained on Chemstrand nylon as is normally encountered with dispersed acetate dyestuffs, but with the high fastness properties of acid and direct dyestuffs, particularly when after-treated."

Science News Letter, November 17, 1956

BIOPHYSICS

**See Atomic Weapon
As Hepatitis Stopper**

► COBALT-60, a powerful atomic medical weapon, may be the means of checking serum hepatitis, the serious and sometimes fatal liver infection best known to laymen as jaundice because a yellow skin is one symptom.

The idea of turning the gamma rays of cobalt-60 to killing the virus that causes hepatitis was suggested by Dr. Russell T. Jordan of the City of Hope Medical Research Institute, Duarte, Calif., at the International Symposium on Viral Hepatitis at the Henry Ford Hospital, Detroit.

The virus of serum hepatitis is carried in the blood stream. Blood and plasma from a person who has had the disease can give it to another, even though the donor has long since recovered.

Anti-hemophilia and perhaps other fractions of blood plasma may transmit the disease. Bone and tissue transplants may possibly also do the same, Dr. Jordan pointed out.

The radiation from cobalt-60 killed St. Louis encephalitis virus in blood plasma, Dr. Jordan reported. This virus is about the same size as the virus of serum hepatitis, he said, which leads him to think the hepatitis virus might also be destroyed by the same radiation.

Even twice the amount of radiation needed did not make the plasma harmful to humans from two to 60 years of age.

Science News Letter, November 17, 1956

PUBLIC HEALTH

**Doctors to Draft New
Poison Protection Law**

► THE NATION'S DOCTORS, as represented by the American Medical Association, are going to draft a "model" law to protect the public from potentially dangerous household and commercial chemicals, from household cleansers to putty, art supplies and toys containing chemicals.

The law would cover labeling of many possibly harmful chemicals not now regulated. It would require labels to carry first aid instructions as well as information on the product's contents, its possible dangers and directions for safe use.

Science News Letter, November 17, 1956



PSYCHIATRY

**Seek Mental Ill Clue in
Thyroid's "Hot" Spot**

► SOME CASES of psychological or mental illness might be due to "hot" spots in the thyroid gland in the neck. This possibility is being explored by scientists at the Menninger Foundation, Topeka, Kans.

Patients with overactive thyroid glands usually have a cluster of "psychoneurotic" complaints such as sleeplessness, irritability, restlessness, unexplainable crying spells, apprehensiveness and nightmarish dreams.

The Menninger scientists gave a group of patients with these symptoms tracer doses of radioactive iodine. Iodine is used by the thyroid gland to manufacture its hormone. The tracer doses showed that the glands of this group of patients had overall normal functioning, but had small, localized spots of overactivity.

These spots were called "hot nodules" because they picked up the radioactive chemical in excess amounts.

Now the scientists are trying to learn whether patients with such "hot" spots in their thyroids have a common personality makeup and whether treating the thyroid will overcome the "psychoneurotic" symptoms.

Scientists working on this research are Drs. Robert S. Wallerstein, Philip Holzman, Nathaniel Uhr, Homer Hiebert, Frank Hoecker and H. W. Barrett and Mr. Richard Siegal. The research is reported in the foundation's annual report (1955-1956).

Science News Letter, November 17, 1956

PALEONTOLOGY

**Scientist "Pans" for
Ancient Treasures**

► GOLD-MINING METHODS are being used to find fossils on a mass scale by Malcolm C. McKenna of the University of California Museum of Paleontology.

During the past summer, use of the method yielded some 12,000 whole mammal teeth and fragments of 10,000 others from rocks about 60,000,000 years old in Wyoming, Utah and Colorado.

What Mr. McKenna does is look for fossil fragments on the surface of the ground, usually an indicator of a promising fossil bed. Then he loads rock and loose material into a burlap sack, and hauls it to the nearest stream. There he shovels the material into a large screened container, where the stream washes the brittle sandstone and claystone from the fossils.

Mr. McKenna has screened as much as three tons of rock in a day, from which he has obtained as many as 700 specimens.

Science News Letter, November 17, 1956

CE FIELDS

BIOCHEMISTRY

Sleeping and Wake-up Chemicals Related

► SLEEPING MEDICINES and drugs to counteract sleeping medicines have been developed from the same class of chemical compounds.

The chemicals are glutarimides. Their varying action on mice is reported by Dr. T. C. Somers of the Nicholas Institute for Medical and Veterinary Research, Melbourne, Australia, in *Nature* (Nov. 3).

One glutarimide, known by two names, Bemegrade and Megimide, antagonizes the barbiturate sleeping medicines and has led to a new treatment for barbiturate poisoning.

Search for other glutarimides that might counteract barbiturates led to discovery of some that have sleep-inducing properties themselves, Dr. Somers reports. These glutarimides, like barbiturates, may also be counteracted by Bemegrade.

Science News Letter, November 17, 1956

PSYCHIATRY

Other Problems May Cause Reading Troubles

► A CHILD who has been unable to learn to read may have problems of other kinds, a Michigan psychiatrist told an education conference at the University of Michigan.

Dr. Ralph Rabinovitch, director of the Hawthorne Center, Northville, Mich., said every child who fails to learn to read should be specially studied so that the causes of his failure can be determined. He listed four basic reasons for reading failure:

1. Brain damage, such as head injuries or damage from disease. This includes damage to the brain before birth, such as may occur when the mother has German measles in the first three months of pregnancy.

2. Inability to learn the functions of symbols; more specifically, inability to learn that given marks on paper represent given ideas.

3. A slow development of certain functions of the nervous system involving the processes of association. This is called a developmental lag.

4. Lack of motivation or poor instruction.

Dr. Rabinovitch said children who cannot read because of brain damage are not necessarily unintelligent. Such children, he said, have great difficulty differentiating sizes, shapes, heights and seasons. A child with this affliction may say something like, "Christmas comes in July because it is very cold then."

Dr. Rabinovitch stated that children who

suffer from a developmental lag will make good progress in reading if given help with personality problems.

The psychiatrist blamed lack of stimulation and lack of opportunity for certain cases of reading retardation.

"We have learned now that it is rare to see children who have only one problem. The great majority of children who do not have biological trouble are suffering from frustrations in many areas. They are often suffering from both home deprivation and school deprivation," he said.

"The general goal of research in clinical psychology should be to sharpen our diagnostic insights so that prevention of reading difficulties at age seven or eight, or even before, will be the answer," he concluded.

Science News Letter, November 17, 1956

TECHNOLOGY

Irradiated Cotton Research Launched

► WHETHER COTTON, like some foods, can be improved by irradiation will be studied by Massachusetts Institute of Technology scientists working under contract with U. S. Department of Agriculture.

They will expose cotton fiber, yarn and fabric to high-energy radiation generated electrically or by radioisotopes in an attempt to learn whether radiation helps or harms chemical treatment of cotton.

The scientists try to find out how much radiation can be absorbed by fibers, yarns and fabrics without sacrificing strength, elasticity, resilience or affinity for dyes. They will attempt to make some fabrics more durable with radiation.

Dr. Bernard E. Proctor will direct the work at M.I.T. and C. L. Hoffpauir will head the project at the Department of Agriculture's Southern Utilization Research Branch, New Orleans, La.

Science News Letter, November 17, 1956

CHEMISTRY

First Synthetic Rubber Like the Plant Makes It

► NATURAL RUBBER has been synthesized. This achievement is no rival in actual rubber production to the rubber tree or the various synthetic rubbers made industrially from coal and petroleum.

The first rubber synthesis was accomplished in Puerto Rico by Dr. H. J. Teas, then of the U. S. Department of Agriculture's Agricultural Research Service, now at the University of Florida, and Dr. R. S. Bandurski of Michigan State University.

Only minute amounts of actual rubber were made. The scientists started with cell-free enzymes from the rubber plant and by adding vinegar-like acid compounded real rubber.

Radioisotope carbon 14 was used to follow the steps in the rubber synthesis. Catalysts were used to bring about the enzyme-acid reaction.

Science News Letter, November 17, 1956

CHEMISTRY

New Type of Chemical Bond Is Discovered

► A NEW TYPE of chemical bond, opening up wide horizons of research and throwing new light on catalysts, the substances that speed up chemical reactions, has been discovered.

Dr. Walter Edgell of Purdue University, Lafayette, Ind., found that in cobalt carbonyl hydride [Co (CO)₄ H] the hydrogen atom is bonded to three of the four carbonyl (CO) groups and to the cobalt atom as well.

Previously it was believed that the hydrogen was attached either to one of the CO groups or solely to the cobalt atom. Spectroscopic studies yielded results inconsistent with either view and supporting Dr. Edgell's "bridge model."

In addition, the "bridge model" is substantiated by measurements of the way in which the hydrogen nucleus lines up its axis of precession within the magnetic field of the molecule's electron cloud. This is known as nuclear magnetic resonance.

Metal carbonyl hydrides, such as the compound studied in this project, are used as catalysts in making gasoline and in manufacturing alcohol. Dr. Edgell's findings help explain how this chemical trick is accomplished. They also contribute to a consistent theory of chemical bonding.

The research was performed under a grant from the Atomic Energy Commission.

Science News Letter, November 17, 1956

PSYCHOLOGY

Silent Movie Filmed For Lip Reading Study

► A SILENT MOVIE has been filmed at the University of California at Los Angeles for a special study of lip reading and the complex technique of human communication in general.

The film was produced by Louis Stone, psychologist, with the assistance of film experts, Marc Snegoff and O. E. Patterson, and with the support of the John Tracy Clinic for the Deaf of Los Angeles.

The 16 millimeter color film without a sound track attempts to produce the face as the lip reader may see it. In a portion of the film, the face is partly masked by clear plastic while the camera focuses on the mouth through a hole in the plastic. This gives much of the same effect as focusing the eyes on the mouth.

In the course of the film, the hole in the plastic is broadened so that other features are brought into focus. The actor in the film speaks his lines in both animated and "deadpan" sequences.

It is hoped studies with the film will furnish insight into some factors of speech communication, such as whether lip readers perceive only the formation of words by the mouth or receives cues from the eyes and variation in facial expressions.

Science News Letter, November 17, 1956